

Forecasts of Grape Downy Mildew for New York and Pennsylvania Regional IPM Programs

David M. Gadoury, Robert C. Seem, and Wayne F. Wilcox

Senior research associate and associate professors, respectively, Department of Plant Pathology,
Cornell University, New York State Agricultural Experiment Station, Geneva

Abstract. Grape downy mildew is a destructive disease of both wine and processing grapes in New York and Pennsylvania. It's occurrence is sporadic, and seemingly unpredictable. We developed a computer model (DMCAST) which forecasts both initial infection, and cycles of secondary disease development. Our objectives were (1) to simplify the original DMCAST (which was a model designed for research) for practical use in regional IPM programs, and (2) to evaluate the utility of model forecasts of downy mildew in a management program for multiple diseases. Fifteen years of weather, vine growth, and first occurrence of disease were analyzed to produce a simple set of rules to forecast initial disease. The first downy mildew infections occur when vines reach a critical prebloom stage (5-6 flat leaves, flower clusters clearly visible but not yet expanded), and there is 0.10 inches or more of rain, and temperatures during the rain event are above 52 F. DMCAST warnings of secondary infection timed fungicide applications for effective control with a reduced number of sprays. Additional improvements can be expected if cultivar susceptibility to downy mildew is factored into model forecasts and management decisions.

For a printed copy of the entire report, please contact the NYS IPM office at:

IPM House
630 W. North St.
New York State Agricultural Experiment Station
Geneva NY 14456
315-878-2353